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ABSTRACT

Designed for use by vocational educators in planning, developing, and implementing a competency-based curriculum that is individualized, this guide begins with definitions of "competency-based curriculum" and "personalized instruction" and rationale for their use. A section on planning suggests resources to check before planning a new curriculum and outlines the first three of seven suggested steps for developing a competency-based personalized instructional system: develop a philosophy, define terms, and develop a plan. This is followed by a section on curriculum development which covers the next two steps: determine competencies and tasks and organize instructional resources (learning packets; objectives; mode, method, and media; learning activities or strategies; and evaluation of learning). The sixth step, manage the learning environment, is discussed in a section covering the role of the instructor, testing and grading, monitoring the student's progress, monitoring the student's attendance, and using learning contracts. Evaluation and revision of the system, the final step, is outlined under two topics: areas needing evaluation and revision. A final section on assessment contains rating scales for use in assessing the extent to which an existing program is personalized and in assessing progress toward personalization once a revised program is in operation. A bibliography of suggested resources is appended. (JT)

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THE VOCATIONAL EDUCATOR'S GUIDE TO COMPETENCY-BASED PERSONALIZED INSTRUCTION

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Developed by Project H. O. P. E.

-Minnesota-

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WHAT IS PROJECT H. O. P. E.?

Project H. O. P. E. (Helping Others Personalize Education) is funded by the Education Professions Development Act through the U. S. Office of Education Division of the Department of Health, Education, and Welfare. The project is under the auspices of the Minnesota State Department of Education, Vocational Division. It was designed to provide in-service education for vocational education personnel with the emphasis on competency-based personalized instruction. Project H. O. P. E. has developed this resource manual to be used statewide to assist vocational educators in developing and implementing a competency-based curriculum using a personalized approach.

COLOR THEM INDIVIDUAL

"Even if 30 pupils hear the same instruction, given at the same time, by the same teacher, all 30 hear something different, because they're individuals. The effective vocational school teacher recognizes this - and allows for it."

Anonymous

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What is Competency-Based Personalized Instruction?

WHAT IS COMPETENCY-BASED PERSONALIZED INSTRUCTION? (Definition)

INTRODUCTION

There is a Hindu fable about six blind men describing an elephant that demonstrates why there are so many views and opinions about competency-based personalized instruction.

> *Each went to find out for himself what an elephant looked like. The first man felt the side and decided that the animal was like a wall. The next man happened to feel the tusk, so he was sure that the elephant was like a spear. Still another grabbed the trunk, so he thought the animal was like a snake. The fourth blind man put his arms around the elephant's leg, consequently, to him, the animal was like a tree. The next man felt the elephant's ear, so he compared the animal to a fan. Finally, the last one seized the tail and immediately he thought the elephant was like a rope. Each of the six men clung to his own opinion of what the elephant looked like. Although each man was partly right, each thought his opinion was the only correct one and all others were wrong; therefore, no one made any further attempt to find out the truth.*

This fable illustrates the elusive nature of competency-based personalized instruction. The purpose of this resource manual is to allow the vocational educator to explore, examine, feel, search, and come to "grips" with "competency-based" and "personalized" instruction. Essentially, it is a search for the truth about these controversial concepts.

A COMPETENCY-BASED CURRICULUM

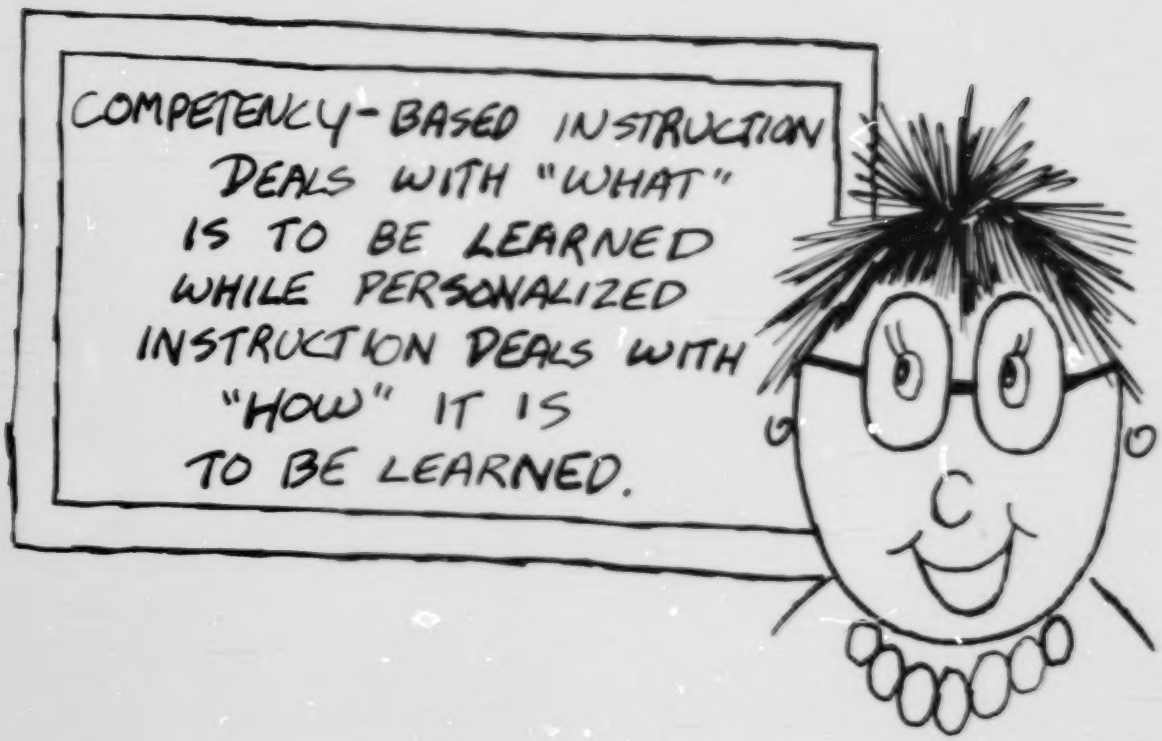
The terms "competency-based" and "performance-based" describe a curriculum that identifies what the student must

"do" to successfully function in a specific occupation. The level of performance is clearly specified and the students verify their learning by way of the competencies which include the cognitive (knowing), psychomotor (doing), and affective (attitudes and feelings) behaviors necessary. These competencies are "minimum" performance requirements and students do not graduate until they have met them. Ultimately, the competencies become the students' transcripts as they seek employment. A competency-based curriculum may be used effectively in a traditional setting but it particularly lends itself to a "personalized" or "individualized" delivery system.

PERSONALIZED INSTRUCTION

Personalized instruction is student oriented and its overall goals are to meet individual needs and to provide for individual differences. The basic premise is that students learn different "things" at different rates, at different times, and by different methods. It provides the students with "alternatives" from which they select learning activities adaptable to their own learning style. The length of time for the course or program depends upon the student's demonstrated competence rather than some arbitrary time limit.

You will find the terms "personalized" and "individualized" are often used interchangeably. Some have misconstrued these terms to mean only independent study. Independent study, as well as, one-to-one, small group, and large group, are all important parts of personalized instruction.


COMPETENCY-BASED INSTRUCTION
DEALS WITH "WHAT"
IS TO BE LEARNED
WHILE PERSONALIZED
INSTRUCTION DEALS WITH
"HOW" IT IS
TO BE LEARNED.

Why have Competency-Based Personalized Instruction?

SECTION B

WHY HAVE COMPETENCY-BASED PERSONALIZED INSTRUCTION? (Rationale)

The vocational educator of today recognizes certain limitations of traditional approaches to education. Educators have talked for many years about a system of instruction that would eliminate the traditional "lock-step" approach in which students proceed through programs at the same pace. A competency-based personalized system would compensate for the fact that no two people learn at the same rate.

A. What does competency-based personalized instruction mean to students?

- -being given credit for what they already know (advanced standing).
- -being able to proceed at their own rate within program guidelines.
- -being able to identify what they need to know or do.
- -being given more responsibility in decision making and time management.
- -entering and exiting a program at different times during the year.
- -being able to move freely in the classroom and/or laboratory.
- -competing against a pre-set standard-not another student.

-having a choice in how they learn-one-to-one, small group, large, or audiovisual.

-accepting responsibility for their own learning.

-having a "performance" based curriculum.

-being graded on achievement of standards or criteria for each segment of the curriculum.

-entering the job market at different times during the year instead of an entire class all at once.

-demonstrating "mastery" learning at the level of performance designated by the occupation.

B. What does competency-based personalized instruction mean to <u>employers</u>?

-knowing that students have had practice in taking responsibility, making decisions, and managing time.

-being able to review a competency listing to see if the individual has the skills necessary to do the job.

-being able to hire students at different time intervals during the year.

C. What does competency-based personalized instruction mean to the <u>instructors</u>?

-gaining satisfaction from knowing tasks learned by the student are necessary for that student to have at job entry.

-being able to work as part of a team-contributing the skills they know best.

-having the responsibility of advising a group of students.

-being totally responsible and accountable for a segment of the curriculum.

-being part of designing a student's personalized program.

-being a "manager of learning" rather than a "giver of all" information.

-facilitating the learning process by being a resource for each student.

-participating in several modes of instruction -one-to-one, small group, large groups.

-creating audio-visual materials.

D. What does competency-based personalized instruction mean to the <u>school</u>?

-allowing entry into and exit from programs throughout the year.

-keeping average daily membership of the class at an appropriate level.

-being able to allow for participation of part-time students.

-using staff, facilities, and equipment more effectively.

-establishing credibility through insuring student competency in a training area or part of that training area.

-being better able to meet the needs of <u>all</u> people it serves.

Someone has aptly said:

WE LEARN ONLY WHAT WE WANT TO LEARN.

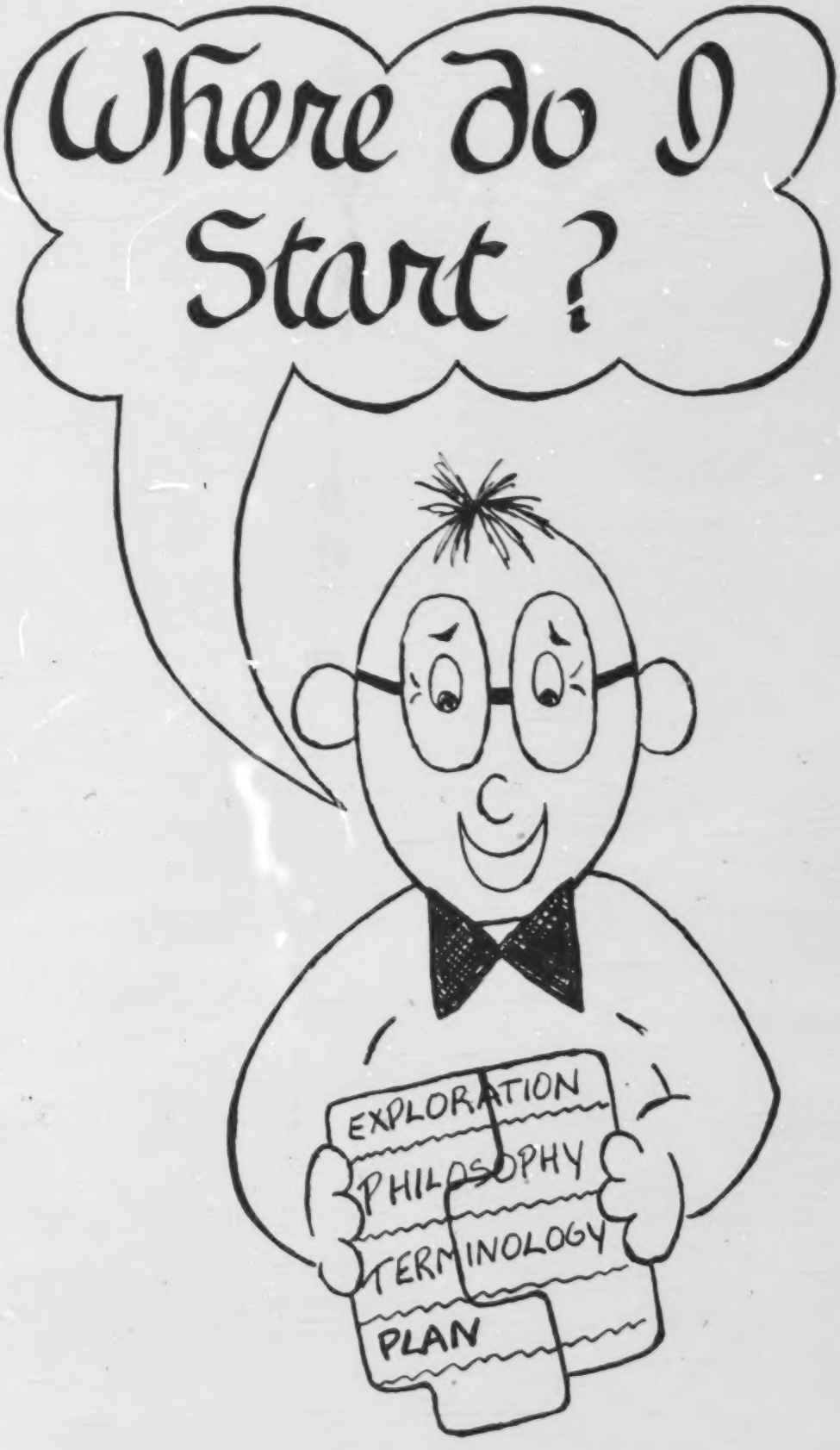
(That's motivation!)

WE LEARN IN RELATION TO WHAT WE ALREADY KNOW.

(That's experience!)

AND WE LEARN BY DOING!

(That's vocational education!)


Where do I Start ?
EXPLORATION
PHILOSOPHY
TERMINOLOGY
PLAN

SECTION C

WHERE DO I START? (Planning)

EXPLORATION

Your initial thrust will be to investigate various "areas" of competency-based personalized instruction. Exploration is important. Without it, you will unnecessarily re-invent the wheel. We would suggest that you:

A. Find out what's available.

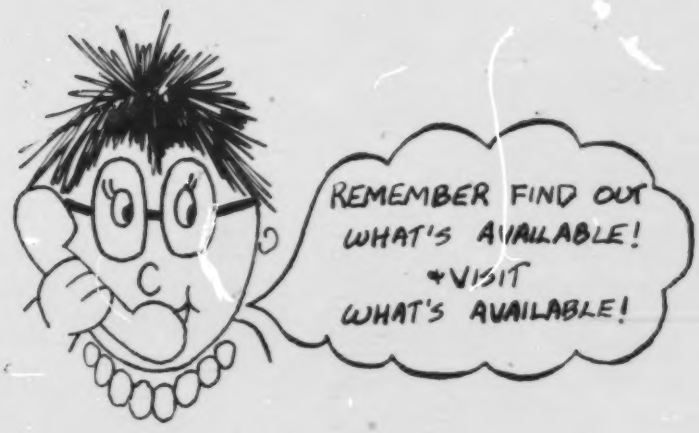
You will probably be interested in available task analyses, competency-based curricula, and schools or programs with a personalized delivery system. For specific information, you should contact:

1. Minnesota Department of Education - Vocational Division.
2. Minnesota Instructional Materials Center.
3. The Research Coordinating Unit, and do an ERIC search to find out what's available nationwide.

B. Visit what's available.

It is important to visit as many schools as possible that are presently using this approach. As you visit schools or programs, observe their facilities, format of instructional materials, flow of students, organi-

zation of learning materials, recordkeeping, use of personnel, and type of supportive services available. Some other things to look for are the availability of a vocational resource center (assistance for students who need extra help), printing or reproduction services, audiovisual services, and a testing center. Perhaps at a later date, you might want to schedule a second visit to the same school so that you can explore in more depth certain areas that you might have overlooked on your initial visit.



SUGGESTED STEPS* FOR
DEVELOPING A COMPETENCY-BASED
PERSONALIZED INSTRUCTIONAL SYSTEM

STEPS	COMMENTS
1 Develop a Philosophy	Although a philosophy is usually a brief statement of beliefs about the purpose of the school, it is well to involve participants in a discussion of what is meant by it. Discussion should be held on how students learn, what is the role of the student, the instructor, the school. What are the aims and purposes of the school. The philosophy should represent a statement of what the school hopes to become. This should include a statement of goals for the district.
2 Define Terms	A consistent usage of terms is needed for successful communication among participants in a curriculum effort. Educators create new terms more quickly than the old ones can be defined. It will be necessary to define terms which will be necessary ingredients of the desired system. For example, what do terms, open ended, open entry, mean in an applied setting? Differences should be resolved in favor of creating successful communications. Also, the goals stated in Step One, should be defined.
3 Develop a Plan	Given basic beliefs and goals of a philosophy and the communications ability of consistent terminology, a plan of the system should be designed. This will establish the basic guidelines for your system. How does the system work, how does a student pass through it, what is the role of the instructor, what are the support systems necessary for success. It is at that point that roadblocks should be assessed and realistic determinations made about how to proceed.
4 Determine Competencies and Tasks	The learning content for each program should be determined. What are learning requirements for entry into a specific occupation? What legal concerns and traditional requirements must be met by the program? Which skills are best learned on the job, which in school? Which are most difficult, which easy? In what order are they best learned?
5 Organize Instructional Resources	Identify needed resources such as facilities, equipment, supplies, and other instructional materials. Determine modes of instruction, large groups, small groups, individual. Determine methods of instruction to be used. Prepare audio visual aids, printed instructional materials and other printed references. Determine alternative strategies for individual differences and alternate learning methods.
6 Manage the Learning Environment	Prepare for management of the system. Make checklists and forms for recordkeeping. Make schedules to regulate flow of students. Prepare instructions for students. Arrange for orientation, monitoring, providing individual help, evaluation of learning. However, the heart of the personalized approach is to assess, diagnose, and prescribe for learning.
7 Evaluate and Revise the System	It is unlikely that any instructional system will be faultless in design through implementation. Evaluate the system in terms of its ability to meet goals. Does it accomplish the aim? Determine how unforeseen problems can be made consistent with the overall goals of the system. Don't be afraid to change. Re-evaluate the original steps in the light of new information. Maintain curriculum in a dynamic state.

*For use at State, District, School, Division, or Program level.

DEVELOPING A COMPETENCY-BASED PERSONALIZED INSTRUCTIONAL SYSTEM

There are basic steps that must be considered when developing a competency-based personalized system. These steps may be accomplished by an individual program or an entire school and/or district. The following chart identifies the suggested steps. Each of the steps will be discussed in this resource manual. However, it is important to note that there is nothing magical about the order of the steps. In some situations, the steps will be used in a different order. Also, the steps are not as distinct as they seem and some may be done simultaneously.

These steps may be used by an individual or a committee assigned the responsibility of formulating an instructional system. If a committee is used, it should have broad representation of the administration, teaching staff, and students.

If you follow the seven steps as outlined, you should have success with this task. We must emphasize the need for substantial in-service education of staff to help you achieve your goal. However, a detailed approach defining how this in-service help may be developed is beyond the scope of this manual.

DEVELOP A PHILOSOPHY.

Each district, school, department, division, and program should have a philosophy statement. This states what education is and what it does for students. A philosophy is necessary when planning any type of instruction. If you are planning competency-based personalized instruction, your philosophy must reflect a commitment to this approach. All levels within the school must work together in the development of a philosophy. Administrative commitment is reflected in terms of time, money, and materials.

DEFINE TERMS.

There is much confusion over definitions of the various terminology relating to competency-based personalized instruction. Terminology between systems and authors is often inconsistent. Because of differences, it is critical that each district, school, department, division, and program establish a common language specific to their needs. The following chart compares some typical definitions which may be useful in understanding the relationship of the many terms commonly used.

A COMPARISON OF TERMINOLOGY FREQUENTLY USED IN PLANNING
A COMPETENCY-BASED PERSONALIZED INSTRUCTIONAL SYSTEM

TERM	DEFINITION	OTHER TERMS USED WHICH COULD MEAN THE SAME THING
Program	An educational offering of the AVTI into which students enroll and upon completion of which are prepared to enter an occupation or closely related groups of occupations. Example: Auto Mechanics.	Course Course of Study Occupational offering A curriculum
Unit	A major grouping of instructional content arranged because of its similar nature or for ease of instruction or learning. Example: Brake Service.	Course Block Competency Area Area of competence
Competency	A general but observable skill. The ability to fulfill a duty or responsibility. Usually made up of the ability to determine the need for and employ certain task procedures. A close grouping of related tasks. Example: Repair Brake System Components.	Might be referred to as any derivation of the word competence. Responsibility Duty Skill Job Task
Task	A specific work accomplishment performed under a specific set of conditions and to a determined quality or quantity standard. The basic building block of the curriculum. A complete piece of work. Example: 1) Machine a brake drum, or 2) Rebuild a wheel cylinder.	Objective Procedure Operation Lesson Terminal Objective Step Topic
Sub-Task	Specific steps or objectives related to a task. Example: 1) Mount the brake drum on the brakedrum lathe, or 2) Hone a wheel cylinder.	Step, Micro Objective, Knowing objective, doing objective, intermediate objective, enabling objective, and many specific kinds of objectives. Task Detail
Packet	An instructional guide that includes performance objectives, rationale, learning activities, and related resources.	Module (MODS) Learning Unit Learning Activity Packets (LAPS) INDIVIDUAL Learning Packets (ILPS) PAKS

DEVELOP A PLAN.

In the development of an instructional system, it is wise to design a plan before starting to work on the finished product. The following is a description of such a plan.

The basic plan of an instructional system is likely to be somewhat theoretical in concept. The purpose of developing such a plan is to test reality to see if the system is operable. It should show how the pieces must be developed to make the instructional system function as well as how the pieces should fit together.

There are at least three ways to develop the plan in organizing an instructional system.

1. A narrative description can be written depicting in detail how the instructional and learning process takes place as a student moves through the program being planned.
2. A flow chart of the type used by systems design people can be used to graphically illustrate the steps, components, decision points, and alternatives available or needed in the system.

3. A live model simulation can be developed (usually not without previously doing one of the previous two) for a special program or for some special segment of instruction in a given program.

Of primary importance, however, is the plan's ability to lay out the requirements of the system which will affect the demands to be made upon administration, staff, facilities, students, and special resources.

If there is no hope of being able to obtain all the resources required by the plan, an alteration of the plan would be wise. The development of a plan presents the opportunity for a somewhat realistic analysis of demands and limitations to be confronted and provides the communication vehicle for explaining the instructional system to staff, students, and interested others.

Regardless of the type of plan used, the following questions must be answered:

-How does the student move through the system?

-Is there a standardized format for learning materials?

-What type of media equipment will be made available?

-What modes of instruction will be used?

-What methods of instruction will be used?

-What is the role of administration?

-What is the role of the instructor?

-What is the role of support services?

-How will records be kept?

-What will the grading system be?

-How will the student be evaluated?

-How will the system be evaluated?

These are just a few of the questions that we hope to answer in this resource manual.

Your plan is the guideline for your staff and students in using competency-based personalized instruction. It must be flexible enough to allow for individual creativity. However, it should provide a broad format to be used by the district, school, department, division, and program. This system assures students that they will be able to move from instructor to instructor, class to class, department to department, and division to division, without an entirely new orientation to the overall system. This, of course, cannot be accomplished if an individual program is developing the system apart from the rest of the school.

What do I do Next?

SECTION D

WHAT DO I DO NEXT? (Curriculum Development)

INTRODUCTION

To prepare curriculum for competency-based and/or personalized instruction, it is necessary to:

1. Determine competencies and/or tasks.
2. Organize instructional resources.

This phase of developing your system is a major undertaking. In order to achieve these steps, you must establish long and short-range goals.

Some schools have funded an extra person or persons to assist the instructional staff in curriculum development, while other schools have funded their own instructional staff by giving them additional contract days to achieve the same purposes. Both have been successful in terms of performance on a statewide basis.

In some cases, there are professionally-developed curriculum materials available. These must be thoroughly evaluated as to their usefulness. However, many programs have effectively implemented purchased materials. Materials are also available through curriculum and articulation projects within the State of Minnesota.

There is no question that curriculum development is time consuming and costly. However, the benefits far outweigh the cost.

DETERMINE COMPETENCIES AND TASKS

Competencies and tasks are terms that have caused much confusion. These terms are sometimes used interchangeably. For our purposes, however, we will define competencies as "Groups of like or associated tasks." A competency then refers to a "general" skill or behavior, rather than a "specific" operation. Tasks are the more specific bite-size pieces that are the basic components of a competency. The competencies and tasks are the targets around which to build the curriculum.

COMPETENCIES

You can develop a competency-based curriculum by first identifying the competencies necessary for a person to find employment in an occupation. Identified competencies are observable and measureable on the job. They are further verified by an advisory committee composed of representatives from industry. This list of competencies must be updated continuously to reflect changes which must be met by entry-level workers to maintain success in the industry.

A complete analysis of the competencies provides the input to the system upon which many decisions can be made. Some of the decisions which will be made are:

How should the competency best be learned?

Who can best teach the competency?

Where can the competency best be learned?

To what depth should the competency be learned?

In what order should the competencies be taught?

Which competencies are the "need to know" and which are "nice to know?"

What is needed to teach the competency?

TASKS

Task analysis is a procedure used to develop a list of specific tasks, job behaviors, or activities that are done on the job. Each identified task is then placed under a competency.

The quality of task analyses varies greatly. Task analysis is at best an imprecise science being performed in a variety of ways by a variety of people. To develop a competency-based curriculum, the curriculum planner may want to devise, or copy a system of task analysis, or may wish to simply use the results of other analysis efforts that may be available. It is important, however, that the task analysis used be pertinent to the local job market.

The product, or results of a task analysis is referred to as a task inventory or listing of tasks required on the job.

In looking at task analysis systems, or results, the following questions might prove helpful in judging their quality:

1. Are the tasks behaviorally stated? That is, can the tasks be observed on the job?
2. Does the analysis provide information about the tools, procedures, materials, conditions, or other variables which affect job performance?
3. Is the task measurable? Are there quantitative or qualitative measures to determine when the task is successfully completed?
4. Is there information which may affect the learning sequence provided? Is the frequency with which the worker must perform the task noted? Is the importance or criticality of the task to the job stated? Is the judged learning difficulty of the task indicated?
5. Does the task analysis system or product provide for validity? Has the information been judged by workers in the occupation and by their supervisors? Has it been evaluated by an advisory committee? Or, has the list simply been put together by one person without any reaction from others?

ORGANIZE INSTRUCTIONAL RESOURCES

INTRODUCTION

Having identified the learning content of a program in terms of competencies and tasks, some means to organize the instructional resources for teaching is necessary.

A conventional lesson plan form found in almost any basic teaching text is the traditional way of organizing instruction. One primary drawback of the conventional lesson plan, is that it is usually prepared for group instruction with the whole class being taught in a lock-step fashion. A competency-based system frequently requires more flexible delivery than can be offered in this fashion. The second shortcoming of the conventional lesson plan is that it frequently explains what the teacher is to do and ignores the students, leaving them as passive participants in the entire process. Active, doing students are better learners.

LEARNING PACKETS

One method of organizing instructional resources is the learning packet or module. Packets come in many forms and are known by many names.

Some are known as: Learning Activity Packets (LAPs), Individual Learning Packets (ILPs), Units, or Modules (MODs). The purpose of the packet is to serve as a "roadmap" for the student to learn a particular skill or knowledge. Packets can be instructor-made, or commercially prepared.

In developing teacher-made packets, it is important to design them in such a way that they are attractive and pleasing to the eye. The addition of cartoons, or interesting comments or thoughts make the materials less burdensome to students. When developing materials, imagine that you are an advertising agent marketing your product, which is "learning." Your efforts to make learning fun and interesting will never go unrewarded.

The components of a packet are:

1. A statement of objectives.

   Performance or behavioral objectives are the lifeline of the competency-based personalized approach to education. They are the criteria by which content is identified, strategies are chosen, and tests and examinations are prepared.

2. A statement of why this objective is important to be learned.

   This is referred to as the rationale. The purpose is to help the student understand "why" it is important to learn the information and/or competency. There should be a direct relationship to the performance in the chosen occupation.

3. Pre-test.

A pre-test is an option sometimes included. It is a teacher-made test geared to the objectives of that particular packet. The purpose of the pre-test is to prevent the already competent student from needlessly undergoing instruction. If the students meet the criteria set up by the faculty and passes the pre-test, they are not required to do that packet and may proceed to another one.

4. Resources.

The resources needed for completion of the packet are listed and their location is identified. These resources may be:

a. print or non-print media.
b. tools, equipment, or materials.
c. people such as fellow students, clients, customers, or the instructor.

If a student can be directed to a good resource, that material should not be included in the packet. However, if there is specific information that cannot be gotten any other way, it is included.

5. Activities and learning strategies.

This section explains to students how they should proceed in order to master the objective(s). Some systems include the resources as a part of learning strategies instead of separating them out. Learning strategies are the "means" to achieve the objectives. The student may proceed as an individual or as a part of a group.

6. Post-test.

This is sometimes referred to as a mastery test. It is the means of evaluation to determine if the student has gained the necessary knowledge and/or skill. If the students do not meet the established criteria, they must redo the packet. Students are allowed to retake the test. In some cases, it will be the same test, but it is better to have several tests for each packet.

The organization of the packet is important as "organization" reinforces learning. Learning objectives and activities should be sequenced in such a way that successful learning experiences build on one another.

Properly administered, learning packets permit a great deal of flexibility in instruction. The instructor must monitor and be available to offer guidance, act as a resource, as motivator, and in general, manager of the classroom scene. The packet is a tool and not an end in itself. The packet must be brought to life by the instructor and should never be considered as a substitute for the instructor.

OBJECTIVES

Writing behavioral or performance objectives seems difficult and foreign to many instructors. Often, they do not see the reason for even attempting to do so. The reason for using a performance objective is that it provides the instructor and student with a tool to determine when successful learning has taken place. Both the students and the instructor

know the desired objective to be accomplished and the instructor's role becomes more one of the coach and learning assistant rather than someone to be "out-psyched," or "out-guessed." The result is a working together toward educational goals.

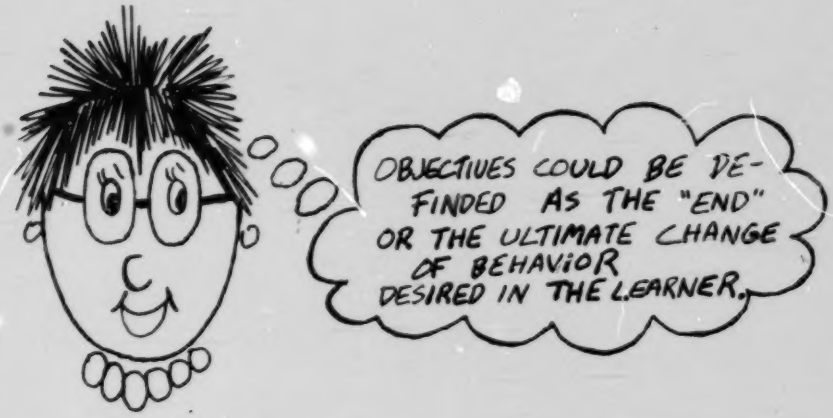
Traditionally, the bright students were always able to determine what was important to learn in the instructional process. The average and slower students have always had a more difficult time perceiving what was important. Performance objectives are "equalizers" in that now all students can know what is important to learn.

Learning to write behavioral objectives takes some practice and requires experience. An instructor first sitting down to write objectives should not become frustrated at the inability to easily prepare them. In general, however, good objectives should be clear, brief, precise, and contain the following components:

1. An action word (verb) which states what the learner is expected to do.
2. A statement of important conditions which will be imposed on the performance of the objective.
3. A statement of the criteria or how performance will be judged successful upon its completion.

Objectives should constantly be evaluated and improved. Even if all the necessary components are in the objective, if it is not written so students understand it, it is a poor objective. Always write objectives for students and not

your fellow teachers. To develop good objectives requires effort, time, and patience.



MODE, METHOD, AND MEDIA

In considering how to organize instructional resources, it is necessary to consider a number of factors. Among these factors are mode, method, and media. All three must be considered in a rather simultaneous fashion for it is difficult to plan one without considering the others.

Mode as used here simply refers to the grouping arrangement which might best provide for learning of the objective being taught. Working as an individual, with a small group, or participating as members of a large group are examples of various modes. Lecture is still an efficient method when you want to give the same information to a large group.

Methods of instruction represent the tool bag of the professional instructor. The ability of the instructor to mix methods of instruction and select those which contribute to the motivation and effective learning of objectives are highly valued qualities as perceived by students. Methods which can be employed are frequently mixed and are open for innovation, but some suggestions for use include the following:

Lecture	Team Teaching
Demonstration	Games
Discussion	Field Trip
Questioning	Guest Speaker
Simulation	Case Study
Role Playing	

Media and instructional aids of many types exist to support and contribute to improved learning. The increased

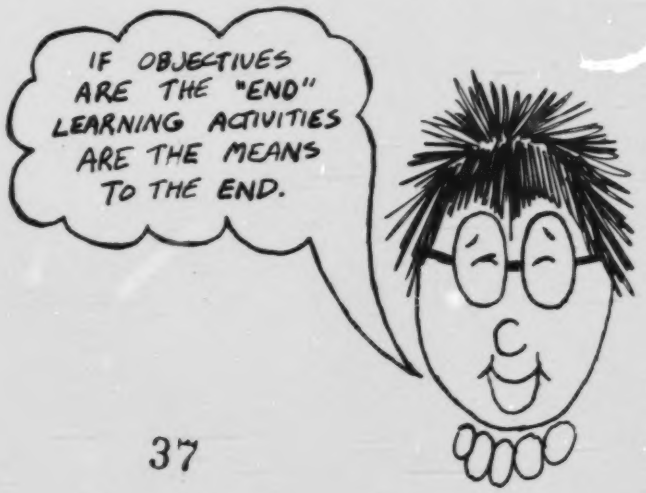
learning power of multi-media, multi-sensory learning stimuli has been well documented and this notion should be recognized by the professional instructor. Media and instructional aids exist along a continuum of very hardware oriented to some very simple and traditional devices. As in the case of mode and methods, selection of media should be based upon which contribute most to learning efficiency and effectiveness given the constraints of the overall system. Following is a list of some media and instructional aids which might be used to enhance the learning of objectives.

Chalkboard	Information Sheets
Transparencies	Text/Reference Books
Still Pictures	Operation Sheets
Maps	Motion Pictures
Audio Tapes	Slides and Filmstrips
Video Tapes	Pamphlets/Brochures
Flip Charts	Models/Cutaways
Job Sheets	

83% BY SIGHT
11% BY HEARING
3.5% BY SMELL
1.5% BY TOUCH
1% BY TASTE
HAPPINESS IS AN INSTRUCTOR WHO IS "SENSE-ABLE" SOMEONE HAS SAID IN USING THE SENSES WE LEARN:

LEARNING ACTIVITIES OR STRATEGIES

The heart of the instructional learning process rests with the development of good learning activities. Learning activities must be designed so the student can move from being unknowledgeable and unable to meet objectives to being knowledgeable and able to meet objectives. Such activities must be designed to take the students at their present point of readiness and move them toward occupational competence. The actual design of learning activities will consist of some mix of mode, method, and media. The development of alternative learning activities designed to match the learning preferences and strengths of individual students is the hallmark of personalized instruction. It should furthermore be remembered that learning resources exist in the form of people, locations, and situations as well. The instructional planner should be imaginative and innovative in designing ways to reach instructional objectives and in identifying resources.



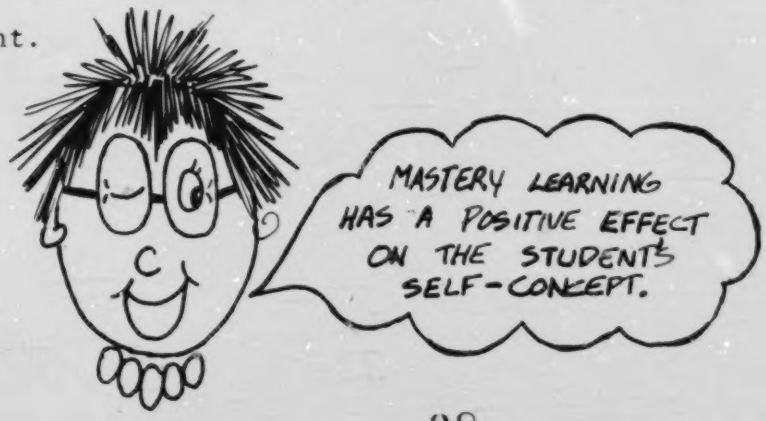
EVALUATION OF LEARNING

With well-written objectives, evaluation is a cinch. However, it should be mentioned that good evaluation, particularly the measurements necessary for evaluation, exist in many forms. Frequently, evaluation has been considered second best if it could not be reduced to the form of a paper and pencil test. This is an unfortunate limitation of our tradition. The vocational instructor would do well to maintain evaluation in as close to industry terms as possible. The more like the actual situation for which the student is being prepared the more accurate and pertinent the standard of measurement is likely to be.

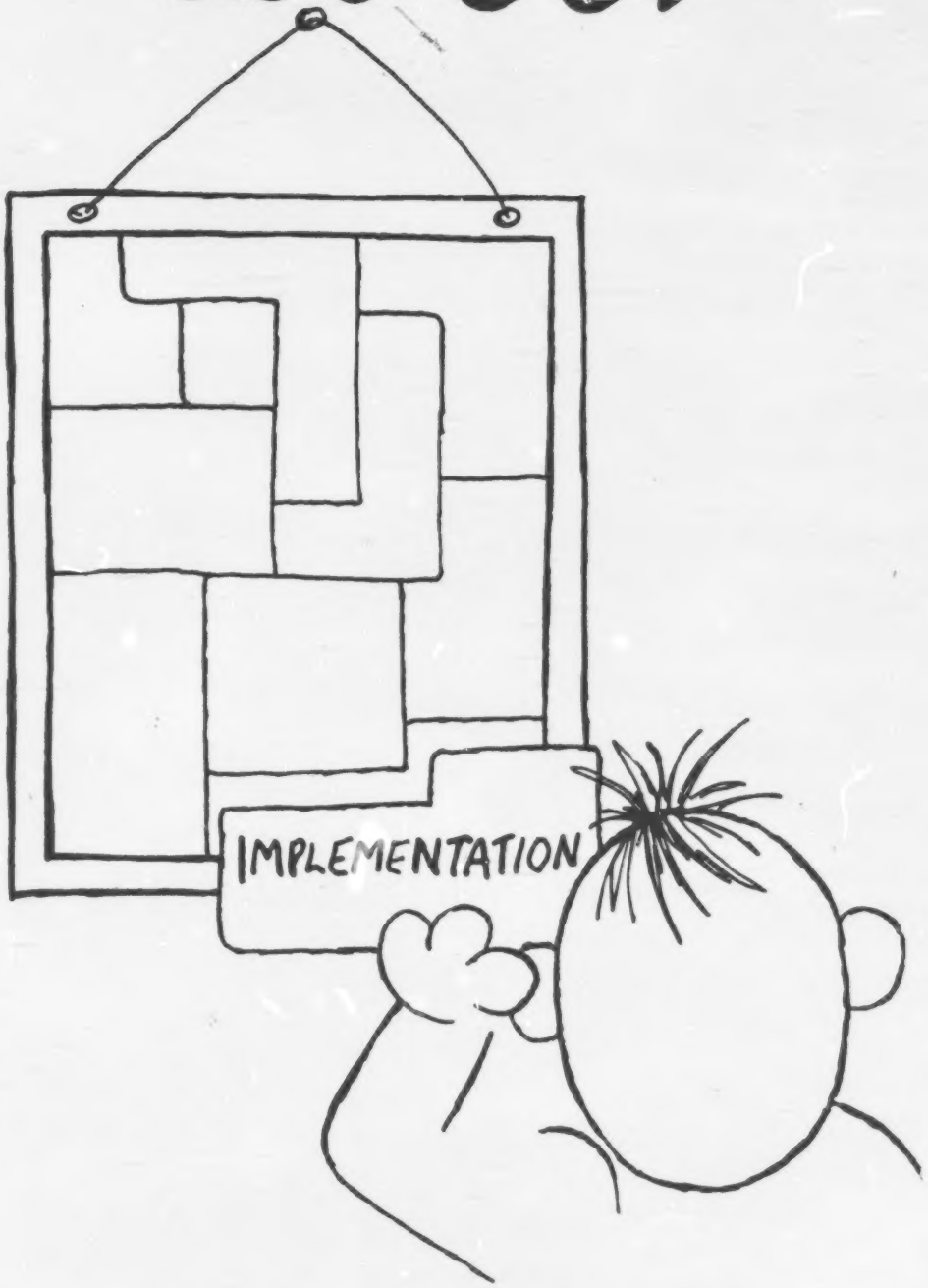
There are many forms of measurement which can be used for evaluation. Some of these are the following:

Written Test	Peer-Evaluation
Performance Test	Critique
Oral Questions	Project/Product
Instructor Observation	Criterion Checklist
Self-Evaluation	Actual Performance

A key principle underlying personalized (individualized) instruction is mastery learning. Essentially, this means all students should be given the opportunity to master program content.



How do I Use It?



SECTION E

HOW DO I USE IT? (Implementation)

INTRODUCTION

There are three general approaches to implementation. First, you could teach this competency-based curriculum in a traditional manner. That is, as most of us were taught. In the classroom, this would be based primarily upon the lecture-demonstration method, with some reliance upon classroom discussion. In the laboratory, the major instructional approach would center around the application of learned skills via class or customer projects. Sometimes this would include using simulations if no actual jobs were available. Of importance is the idea, that the content, or what is taught, is based on a list of competencies. The objectives are also defined in behavioral terms and students have a clear idea of where they are going. Also, the student is evaluated on the basis of becoming competent, not on an average of performance.

Secondly, there is the "modified" personalized approach. This allows students to move at their own rate but within specific time frames. It is similar to the traditional model but the amount of lecture is greatly decreased. There is more flexibility in the modes and methods of instruction. This is particularly important in the transition from a traditional to a completely personalized delivery system.

Finally, there is the fully personalized system. This allows students opportunities for admission at different times of the year. Traditionally, if students cannot get in, they have to wait until the next year. The "open-entry" concept makes vocational education more accessible to students and better able to meet their immediate needs.

Also, based on the concept that the student learns--not the class--the personalized delivery system allows the students to move at their own pace through the program. This does not, however, mean they can take forever. They must demonstrate they are working and are able to perform at a level necessary for that particular occupation.

"Open-exit" means that students can graduate whenever they have met the competencies for the program. Thus, students enter the world of work at various times.

This concept may also be modified as some schools have the programs start together but allow the student to exit when finished. Each school and/or program must determine what is best for them.

The instructor plays an important role in introducing the student to the concept of the competency-based personalized curriculum. The personalized delivery system must be thoroughly explained and initially, the student closely supervised and given a great deal of structure. Freedom comes with students' understanding of the system and how it works. Remember, to avoid chaos, start with structure and move toward freedom.

MANAGE THE LEARNING ENVIRONMENT

ROLE OF THE INSTRUCTOR

The key to any instructional system is the "instructor." This is true for competency-based personalized instruction as well. In this approach, the instructor becomes a "manager" of learning rather than a disseminator of information. All of the methods of teaching are used but they are managed differently. Instructors expect students to succeed! They operate on the principle that almost all of the students can master what the instructor has to teach. This, of course, is based upon the concept of mastery learning.

Essentially, in a competency-based personalized instructional system, instructors wear three hats in their role as educator.

1. Instructor.

   Instructors are responsible for their students' progress. They use the following approach to effectively guide students in their learning.

   A. Assessment - first, you must assess the present level of your students. This should include

information concerning the basic learning skill of students. Their reading level, math skills, and ability to communicate verbally are of primary concern. Of equal importance, is the present level of competence students have regarding the occupation they wish to enter. Both of these assessment activities enable you to determine what the students can do when entering your program. Therefore, you have a better idea of what you need to teach the students while they are with you.

B. Diagnosis - once you have collected this assessment information, the next step is to determine what should be done with students in terms of their learning plan. This is called diagnosis. Initially, this diagnostic process involves deciding what additional basic skills students need in order to progress through your program to employment. Valuable instructional time is thus gained when you are sure of the students' reading levels, math skills, and verbal abilities. Of course, you must be prepared to provide for skill deficiencies before involving students in actual program training. The next phase of diagnosis is to determine what students need to learn in

your program. This is accomplished by studying student assessment information. The assessment process tells you what competencies students already have. Then, as an instructional manager, you decide where the student should begin in the program and/or what competencies of the program the student may skip.

C. Prescription - upon making these decisions, it is time to determine the learning path of students in your program. You could call this prescription. This includes what you will teach and how you will teach it! The point is, not all of your students will proceed through your total program. Nor, will you teach all of your students in the same way. Some students have already demonstrated ability in certain competencies. Some students will learn best by themselves, others in groups, and still others will require a lot of individual attention. Also, some students will learn best by reading, others by viewing audio-visual materials, and others will require tutorial assistance. Thus, prescription includes what students will learn, as well as attention to the learning styles of students so they may learn efficiently.

2. Advisor.

   Instructors are responsible for a certain group of students. In this role, they are a counselor, confidant, and listener. Thus, the advisee is someone who demonstrates a genuine interest in them as a person. The overall goal of this role is to provide students with information and direction; and to encourage their progress.

3. Curriculum Manager.

   Instructors are assigned a certain segment of curriculum. They are responsible for operational procedures, testing material, and any curriculum changes for that particular segment. No change may occur without the curriculum manager's approval.

TESTING AND GRADING

A major difference between competency-based curriculum and traditional models is the determination of instructional success based on a fixed standard rather than a standard of comparison based on other members of the group. This difference is referred to as criterion-referenced instruction as opposed to norm-referenced instruction. Students are no longer competing against each other, but rather they have to meet an established standard. Do the students perform the task at a job entry-level is the question to be asked rather than how do they perform the task compared to the rest of the class. The standards vary from school to school, and program to program; they are usually set by the instructor and/or the advisory committee.

Because the students are informed as to what they need to know and do by the performance objectives and competencies, it is only fair to expect that they master the content. This is based on Bloom's theory that students informed of what they need to know can learn it. Some schools require 90%, some 80%, some vary from competency to competency, but all encourage mastery.

The students are not penalized for retaking a test, but are permitted to retake the test until they have mastered the material. There is no "averaging" out and therefore, they experience success in small steps.

Some schools use a pass/no pass system while others retain the percentage grades as they feel they are still the most effective in communicating student accomplishment to potential employers.

Some schools are developing testing centers which are supervised by a support person. All tests are placed on file and students come in when they are ready for a test. This is especially helpful when the instructor has students at all levels of the curriculum and when they want and need to test at various times of the day.

MONITORING THE STUDENT'S PROGRESS

A reporting system must be devised to keep the advisor aware of student progress. Wall charts are sometimes used to help identify where students are in the program. Other systems use individual progress charts kept by the instructor. Whatever method is used, there must be frequent checkpoints to

determine how the student is doing. Lack of progress requires immediate attention.

MONITORING THE STUDENT'S ATTENDANCE

So many educators have the misconception that a competency-based personalized system means absolute freedom with no concern for attendance. This is far from the truth. Students are being prepared for the world of work which is very structured. Attendance is required at almost all jobs. Thus, it is necessary that attendance be required.

If students complete a competency or packet of materials, there is always another one to do until they graduate. Lack of attendance only delays the student's progress.

Since there is more flexibility and freedom, it is important to establish a method of keeping track of students. Some schools use time clocks while others use the homeroom approach.

USING LEARNING CONTRACTS

The personalized delivery system is geared to helping students learn to manage their time. The use of learning contracts establishes an agreement between the instructor and the individual student. It specifies what the student agrees to accomplish within a given period of time. The contracts aid students in knowing whether they are ahead, on schedule, or falling behind a selected par for program completion.

Individually developed contracts between instructor and student can also serve to solve individual learning problems. Contracts can be used to define objectives and activities to be undertaken by specific students in need of either more, or less structure than is normally provided by the instructional program. Such contracts can serve to optimize the concept of personalization.

How Will I Know When I Get There?

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SECTION F

HOW WILL I KNOW WHEN I GET THERE? (Evaluation)

EVALUATE AND REVISE THE SYSTEM

It's unlikely that any instructional system will be faultless in design and implementation. Thus, evaluation becomes an important part of the overall process of developing competency-based personalized instruction. It will tell you if you have been successful. Evaluation also gives you ideas about what you should revise.

AREAS NEEDING EVALUATION

1. Purpose - Determine if you are doing what your philosophy states you believe about competency-based personalized instruction.
2. Target group - Collect data regarding student population and characteristics.
3. Faculty - Assess their overall response to the system. Assess their:
   - -general needs
   - -individual needs

-need for library materials

-need for media resources

-need for in-service

-need for resource people for consultation

-need for other resources.

4. Students - Assess their overall response to the system.

Assess their response to:

-the total program

-their instructors

-the competencies and/or tasks

-the packets

-the learning strategies

-the mastery tests

-the delivery system.

5. Follow-up - Provide follow-up questionnaires for:

-the new graduate on the job

-the older graduate on the job

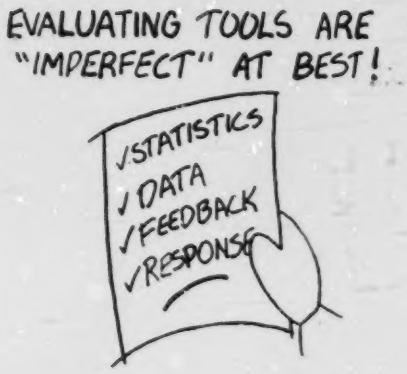
-the employers.

Collect data regarding licensing examinations and certification examinations.

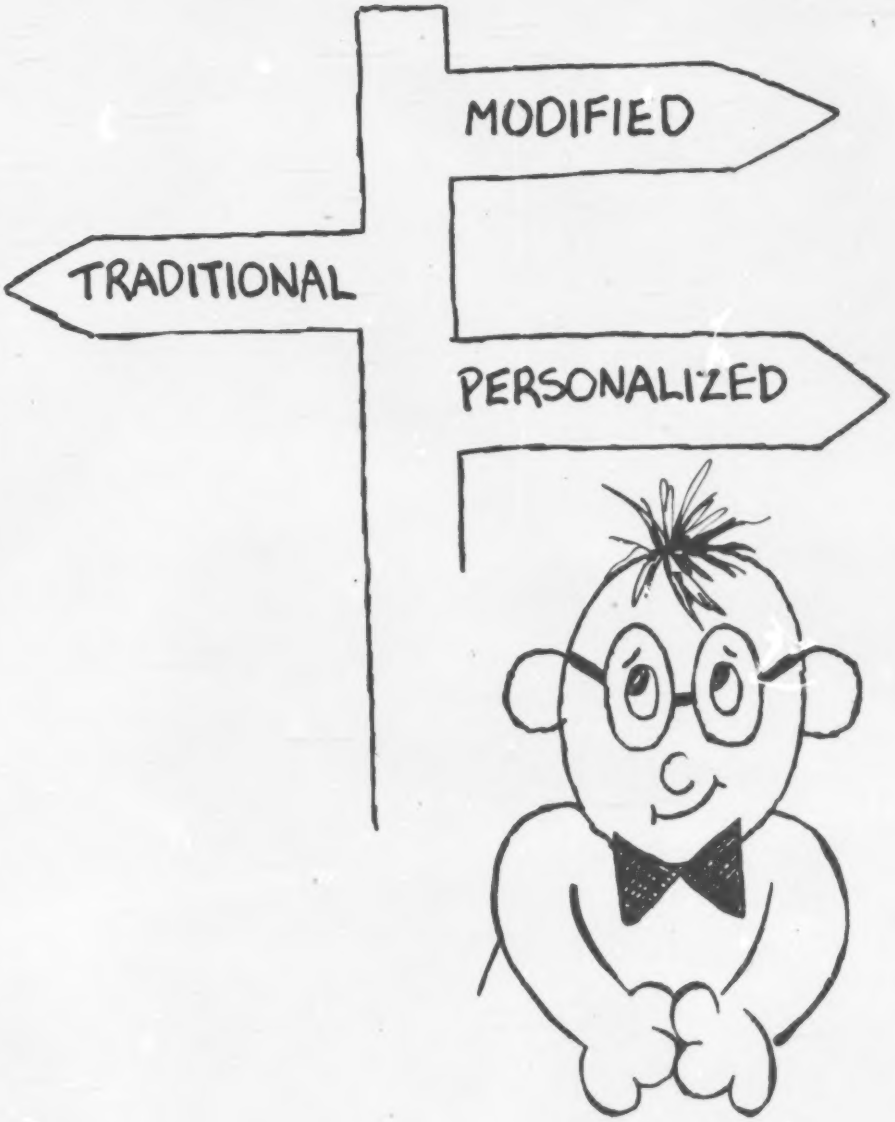
REVISION

Evaluation should be an on-going process. Whenever we attempt to do something different, there will always be some resistance to change. When problems arise and, rest-assured, they will, it is important to determine if it is the concept of competency-based personalized instruction that is not working, or if it is our inability to understand the concept.

To avoid confusion, it is best to make decisions and changes at scheduled instructor meetings. The "over-coffee" decisions are often not communicated to all and thus, result in a breakdown of the delivery system. Each area to be evaluated should be carefully studied before change is instituted. Immediate change to minimize frustration may not solve the underlying problem.



Where Am I Now?



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SECTION G

WHERE AM I NOW? (Assessment)

INTRODUCTION

This will enable you to evaluate to what extent your existing program is personalized. It will assist the individual instructor to:

1. Determine what changes need to be made to fully personalize an existing program.
2. Evaluate a program once it is moving toward complete personalization.
3. Obtain an outside observer's evaluation of your program.

There are three "evaluation rating sheets." The first should be filled out immediately. This should provide information concerning which parts of a program need the most attention to move the program toward full personalization.

The second rating sheet should be filled out when the instructor feels the program is beginning to shift toward personalized instruction. The third sheet should also be filled out at the same time, but by an outside observer.

Source: "Training for Individualized Programs," produced by the Oregon State Department of Education and the Educational Coordinating Council.

EVALUATION RATING SHEET #1

DIRECTIONS:

Rate your present program of instruction on the following scale.

1. Students are tested and placed in the curriculum at the point they are ready to learn.

1	2	3	4	5
never		sometimes		always

2. Students are allowed to progress at their own rate.

1	2	3	4	5
never		sometimes		always

3. Students can pre-test materials they already know.

1	2	3	4	5
never		sometimes		always

4. Students are allowed to select from alternative methods of learning.

1	2	3	4	5
never		sometimes		always

5. Students are assigned learning that meets their individual needs, rather than the needs of the entire class.

1	2	3	4	5
never		sometimes		always

6. Students help each other.

1	2	3	4	5
never		sometimes		always

7. Students understand what to do at all times.

1	2	3	4	5
never		sometimes		always

EVALUATION RATING SHEET #1 (cont.)

8. Students carry out assignments independently without being "spoon fed."

1	2	3	4	5
never		sometimes		always

9. Students are encouraged to participate in the planning of learning activities.

1	2	3	4	5
never		sometimes		always

10. Students know the minimum level of acceptable performance necessary to complete their objective.

1	2	3	4	5
never		sometimes		always

11. The facility allows the student to work alone if he/she desires.

1	2	3	4	5
never		sometimes		always

12. The facility allows students to move about freely to complete their assignments.

1	2	3	4	5
never		sometimes		always

13. The facility allows for both large and small group activity.

1	2	3	4	5
never		sometimes		always

14. All learning materials are accessible to the student.

1	2	3	4	5
never		sometimes		always

EVALUATION RATING SHEET #1 (cont.)

15. Aides (either student or para-professional) are available to provide assistance to students needing it.

1	2	3	4	5
never		sometimes		always

EVALUATION RATING SHEET #2

DIRECTIONS:

Rate your present program of instruction on the following scale.

1. Students are tested and placed in the curriculum at the point they are ready to learn.

1	2	3	4	5
never		sometimes		always

2. Students are allowed to progress at their own rate.

1	2	3	4	5
never		sometimes		always

3. Students can pre-test materials they already know.

1	2	3	4	5
never		sometimes		always

4. Students are allowed to select from alternative methods of learning.

1	2	3	4	5
never		sometimes		always

5. Students are assigned learning that meets their individual needs, rather than the needs of the entire class.

1	2	3	4	5
never		sometimes		always

6. Students help each other.

1	2	3	4	5
never		sometimes		always

7. Students understand what to do at all times.

1	2	3	4	5
never		sometimes		always

EVALUATION RATING SHEET #2 (cont.)

8. Students carry out assignments independently without being "spoon fed."

1 2 3 4 5
never sometimes always

9. Students are encouraged to participate in the planning of learning activities.

1 2 3 4 5
never sometimes always

10. Students know the minimum level of acceptable performance necessary to complete their objective.

1 2 3 4 5
never sometimes always

11. The facility allows the student to work alone if he desires.

1 2 3 4 5
never sometimes always

12. The facility allows students to move about freely to complete their assignments.

1 2 3 4 5
never sometimes always

13. The facility allows for both large and small group activity.

1 2 3 4 5
never sometimes always

14. All learning materials are accessible to the student.

1 2 3 4 5
never sometimes always

EVALUATION RATING SHEET #2 (cont.)

15. Aides (either student or para-professional) are available to provide assistance to students needing it.

1	2	3	4	5
never		sometimes		always

To avoid confusion, it is best to make decisions and changes at scheduled instructor meetings. The "over-coffee" decisions are often not communicated to all and thus, result in a breakdown of the delivery system. Each area to be evaluated should be carefully studied before change is instituted. Immediate change to minimize frustration may not solve the underlying problem.

EVALUATION RATING SHEET #3

DIRECTIONS:

Rate your present program of instruction on the following scale.

1. Students are tested and placed in the curriculum at the point they are ready to learn.

1	2	3	4	5
never		sometimes		always

2. Students are allowed to progress at their own rate.

1	2	3	4	5
never		sometimes		always

3. Students can pre-test materials they already know.

1	2	3	4	5
never		sometimes		always

4. Students are allowed to select from alternative methods of learning.

1	2	3	4	5
never		sometimes		always

5. Students are assigned learning that meets their individual needs, rather than the needs of the entire class.

1	2	3	4	5
never		sometimes		always

6. Students help each other.

1	2	3	4	5
never		sometimes		always

7. Students understand what to do at all times.

1	2	3	4	5
never		sometimes		always

EVALUATION RATING SHEET #3 (cont.)

8. Students carry out assignments independently without being "spoon fed."

1	2	3	4	5
never		sometimes		always

9. Students are encouraged to participate in the planning of learning activities.

1	2	3	4	5
never		sometimes		always

10. Students know the minimum level of acceptable performance necessary to complete their objective.

1	2	3	4	5
never		sometimes		always

11. The facility allows the student to work alone if he desires.

1	2	3	4	5
never		sometimes		always

12. The facility allows students to move about freely to complete their assignments.

1	2	3	4	5

13. The facility allows for both large and small group activity.

1	2	3	4	5
never		sometimes		always

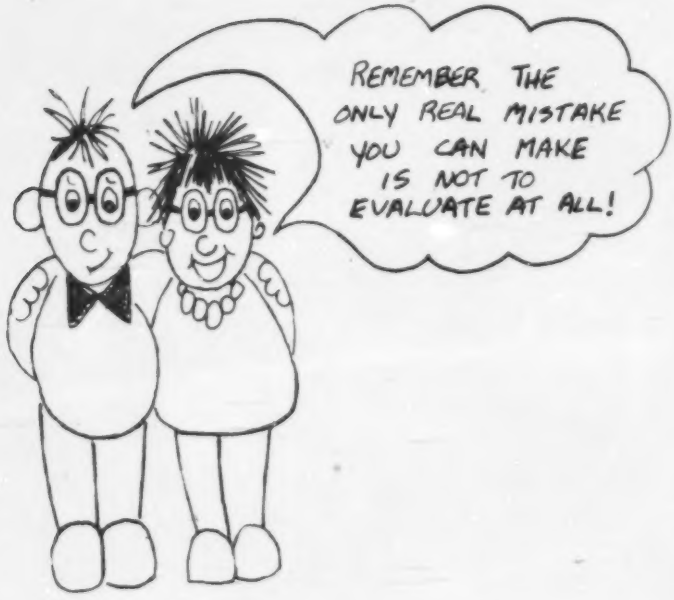
14. All learning materials are accessible to the student.

1	2	3	4	5
never		sometimes		always

EVALUATION RATING SHEET #3 (cont.)

15. Aides (either student or para-professional) are available to provide assistance to students needing it.

1	2	3	4	5
never		sometimes		always



Where Do I Get the Facts?

SECTION H

WHERE DO I GET THE FACTS? (Selected References)

Banathy, Bela H., Instructional Systems, Lier Siegler, Inc. /Fearon Publishers, Belmont, California, 1968.

Burger, Dr. Laura J., and Lambrecht, Dr. Judith J., Handbook for Vocational Instructors Interested in Competency-Based Education, Minnesota Research Coordinating Unit for Vocational Education, University of Minnesota, Minneapolis, Minnesota, 1974.

Byram, Harold M., Evaluation of Local Vocational Education: Manual for Administrators, Teachers, and Citizens, East Lansing: Bureau of Educational Research, Michigan State University, July, 1965, 85 pp., ED 010 791 MF $0.65, HC $3.29.

Carroll, John A., A Model of School Learning, Teachers College Record, 1963.

Competency studies in the area of agricultural occupations have been done by: Department of Agricultural and Industrial Education, Montana State University, Room 313, Linfield Hall, Bozeman, Montana.

Davis, Dwight, and Borgen, Joe, Planning, Implementing, and Evaluating Career Preparation Programs, A McKnight Career Program, McKnight Publishing Company, Bloomington, Illinois, 1974.

Directory of Task Inventories, Volume 1, 2, and 3, The Center for Vocational Education, The Ohio State University, Columbus, Ohio. Also, a document detailing procedures for constructing and using Task Inventories is available from the above source.

Esbensen, Thorwald, Working with Individualized Instruction: The Duluth Experience, Fearon Publishers, Belmont, California, 1968.

Frantz, Nevin R., Jr., Editor, Individualized Instructional Systems for Vocational and Technical Education: A Collection of Readings, Vocational Instructional Systems, Athens, Georgia, 1974.

Fryklund, Verne, C., Occupational Analysis: Techniques & Procedures, The Bruce Publishing Company, New York, 1970.

Instructional and Curriculum, Topical Papers and Reprints, No. 1, "Learning for Mastery," Benjamin S. Bloom, National Laboratory for Higher Education, No. 1.

Instruments and Procedures for the Evaluation of Vocational /Technical Education Institutions and Programs, Pilo Test Edition, National Study for Accreditation of Vocational/Technical Education, American Vocational Association, 1510 "H" Street, NW, Washington, DC, December, 1971.

Mager, Robert F., Developing Attitude Toward Learning, Fearon Publishers, Palo Alto, California, 1968.

Mager, Robert F., Preparing Instructional Objectives, Fearon Publishers, Palo Alto, California, 1962.

Mager, Robert F., and Pipe, Peter, Analyzing Performance Problems, or "You Really Oughta Wanna," Fearon Publishers/Lier Siegler Inc., Education Division, Belmont, California, 1970.

Mager, Robert F., and Pipe, Peter, Criterion-Referenced Instruction: Analysis, Design, and Implementation, Mager Associates, Inc., 1974.

Many Task Analyses and a well-documented process for doing same have been developed by: Instructional Materials Laboratory, 1855 Neil Avenue, Columbus, Ohio. 43210.

Meyer, Judy, Self-Evaluation Guide for Local Districts for Vocational Education of Handicapped Students, Center for Human Resources, College of Business Administration, University of Houston, Houston, Texas, 1972.

National Center for Education Research and Development, Preparing Evaluation Reports: A Guide for Authors, Washington DC: National Center for Educational Research and Development, Office of Education, U.S. Department of Health, Education, and Welfare, 1970, 74 pp, ED 047 002 MF $0.65 HC not available from EDRS. Available from the Government Printing Office, Catalog No. HE5.210:10065, $0.65.

Numerous Minnesota AVTI's have developed listings and procedures for developing task inventories. Other schools with similar programming should be contacted in searching for curriculum resources available.

Numerous states are participating in a consortium effort to develop curriculum as a joint venture. While published results are limited to subscriber states, some information may be available upon specific request from: VO-Techs, Vocational-Technical Education, Consortium of States.

Popham and Baker, Establishing Instructional Goals, Prentice-Hall, Inc., 1970.

Pucel, David J., and Knaak, William C., Individualizing Vocational and Technical Instruction, Charles E. Merrill Publishing Company, A Bell & Howell Company, Columbus, Ohio, 1975.

Task analyses for 47 occupational programs and a well-documented process for doing same have been developed by: Capitol Area Career Center, 611 Hagadorn Road, Mason, Michigan, 48854.

Task and Competency Records Developed for Vocational-Technical Curriculum Articulation in Minnesota, distributed through: Minnesota Instructional Materials Center, 3300 Century Avenue No., White Bear Lake, MN 55110.

Three Phase System for Statewide Evaluation of Occupational Education Programs, Bulletin No. 35-772, Program Approval and Evaluation Unit, Division of Vocational and Technical Education, Board of Vocational Education and Rehabilitation, 1035 Outer Park Drive, Springfield, IL 62706, n d.

A training manual for developing occupational curriculum and the resulting analyses and objectives have been developed by: Division of Occupational Education, Project Career, Department of Education, The Commonwealth of Massachusetts, Springfield, Mass.

Vocational Technical Program Approval: Evaluation Criteria, Pennsylvania Department of Education, Bureau of Curriculum Development and Evaluation, P.O. Box 911, Harrisburg, Pennsylvania 17126, 1970.

Bibliographical entries followed by an ED number are generally available in hard copy or microfiche through the Educational Resources Information Center (ERIC). This availability is indicated by the abbreviations MF for microfiche, and HC for hard copy. Order from ERIC Document Reproduction Service (EDRS), P.O. Drawer O, Bethesda, MD 20014. Payment must accompany order totaling less than $10.00.